Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Lifeline

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Marten Munneke is a senior researcher and health care innovator at the Radboudumc Centre for Parkinson's Disease and Movement Disorders (Nijmegen, the Netherlands). He trained as a physical therapist, human movement scientist, and epidemiologist. He has been a co-founder of the Dutch ParkinsonNet, a nationwide multidisciplinary network comprising neurologists, Parkinson's disease nurses, and specialised allied health-care professionals, with the aim of improving the quality of care.

What has been the greatest achievement of your career?
In 2002, I embarked on a goal to improve the quality of life of patients with Parkinson's disease, with the support of only a neurologist and a Parkinson's disease nurse. Now we have a team of more than 100 enthusiastic colleagues, providing support to not only people with Parkinson's disease, but also to more than 3000 highly trained health-care professionals in the Netherlands. Together with excellent researchers in our team, we strive to develop new knowledge. I am proud to be a founder and part of this team.

What do you think is the most neglected field of science or medicine at the moment?
Research into health-care services and innovations in care should receive more attention. Health-care researchers are typically rewarded most for developing novel insights into innovative treatment options, but I think that it is equally important to constantly improve current health-care services by utilising existing knowledge.

If you had not entered your current profession, what would you have liked to do?
I would have been an architect, designing new buildings. I still regard myself as an architect, but one that designs new models of care instead of houses.

What is your favourite book or film, and why?
The film *Into the Wild*, based on the book by Jon Krakauer, about the life of American hiker Christopher McCandless. I have seen this great film, with spectacular nature scenes and great music from Eddie Vedder, many times. For me, this film is about the lifelong journey to find your own freedom; to release yourself from your inner fears and from societal expectations. But the film is also about the importance of social relations; "happiness is only real when shared".

How do you relax?
On the water, with my windsurfing equipment, preferably on a stormy day. And during days without a good breeze, I like to relax by making new things with my hands. I find woodworking, with plane and saw and chisel, to be particularly relaxing.

If you wrote an autobiography, what would be the title?
Never stop the willingness to improve....

Focal Point

COVID-19: can we learn from encephalitis lethargica?

In 1918, influenza caused one of the most severe pandemics in history. Encephalitis lethargica emerged at around the same time and affected more than one million individuals. It had a nonspecific prodromal phase, with influenza-like symptoms, and an acute phase, characterised by fever, sleepiness, ocular motility disturbances, and movement disorders. Months to years later, patients experienced subtle chronic neurological manifestations, mainly postencephalitic parkinsonism.[1]

Whether 1918 influenza caused encephalitis lethargica is unclear. Von Economo, who first described encephalitis lethargica, proposed a viral cause, and spreading through nasal membranes.[1] Damage of the upper midbrain and substantia nigra has been reported in encephalitis lethargica, and brain atrophy and neurofibrillary tangles have been reported in postencephalitic parkinsonisms, suggesting a shared neurodegenerative component.[1]

Up to 85% of patients with SARS-CoV-2 have minor neurological symptoms such as anosmia.[2] Translational models suggest coronaviruses can be neuroinvasive, with an olfactory route into the CNS,[3] transport along axons,[3] and neuron-to-neuron propagation towards the brainstem.[4] Such transmission would fit with Von Economo's hypothesis and is reminiscent of spreading via neural connections in neurodegenerative conditions.[5]

We should take advantage of both historical and novel evidence. The prevalence of anosmia, combined with the neuroinvasive properties of coronaviruses, might support neuroinvasion by SARS-CoV-2. Whether the infection might trigger neurodegeneration, starting in the olfactory bulb, in predisposed patients is unknown. We should not underestimate the potential long-term neurological sequelae of this novel coronavirus.

Antonino Giordano, Ghil Schwarz, Laura Cacciaguerra, Federica Esposito, Massimo Filippi

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